



CLEAN VERSION OF CLAIMS

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1. A power actuated piston tool with a piston automatic return, comprising
an external barrel having a rear end;
a guiding barrel and a fastener guide situated in the external barrel;
a piston means having a piston shank and a piston head and placed moveably in the guiding barrel between a firing position of the piston means and a fastening position of the piston means via an initial blocking position of the piston means;
a firing-pin assembly situated at the rear end of the external barrel and operatively connected to the external barrel;
means for an automatic piston return of the piston means from the fastening position to the firing position and situated on a piston shank between the piston head and the fastener guide, wherein the means for the automatic piston return is a one-piece elastic returning bush having a shape of bellows wherein external and internal bellows diameters are regularly varied creating uniformly spaced swellings and narrowings and wherein in the initial blocking position of the piston means a sum of wall thickness of all segments created between neighboring narrowings and a length of the fastener guide is slightly larger than a sum of a length of the piston shank and a thickness of a fastener head.
2. The power actuated piston tool, according to claim 1, wherein the one-piece elastic returning bush approximates to a stack of truncated-spherical segments, or to a stack of frusto-conical segments, or to a stack of barrel-shaped segments.

3. The power actuated piston tool, according to claim 2, wherein a maximum internal diameter of at least one segment of the one-piece elastic returning bush at its both ends is smaller than a maximum diameter of remaining segments of the one-piece elastic returning bush.

4. The power actuated piston tool, according to claim 2, wherein end segment walls of the one-piece elastic returning bush are thicker than other segment walls of the one-piece elastic returning bush.

5. The power actuated piston tool, according to claim 2, wherein an internal end surface of external segments of the one-piece elastic returning bush is markedly curved outside thereby a position of a center of curvature is clearly distanced from a returning bush end-face.

6. The power actuated piston tool, according to claim 2, wherein a length of the one-piece elastic returning bush is selected in such a way, that in the initial blocking position of the piston means, a piston shank end-face does not reach its extreme forward position and remains at a distance being greater than the thickness of the fastener head from a base.

7. The power actuated piston tool, according to claim 2, wherein a maximum external diameter of the one-piece elastic returning bush is smaller than an internal diameter of the guiding barrel, that in the initial blocking position of the piston means, an external diameter of the one-piece elastic returning bush still remains smaller than the internal diameter of the guiding barrel,

thus preserving a slight clearance.

8. A power operated piston tool with a piston automatic return comprising

an outer barrel having a firing chamber at a first end;

a guiding barrel mounted in the outer barrel;

a fastener guide having an outer surface at a thin end and mounted at a thick part in the guiding barrel and with the thin end standing out from the outer barrel;

a piston provided with a piston head placed in the guiding barrel and a piston shank inserted in the fastener guide wherein the piston is movably positioned from a firing position via an initial blocking position to a fastening position;

a firing-pin assembly mounted at the first end of the outer barrel; and

a hollow element having a shape of bellows and causing an automatic return of the piston from the fastening position to the firing position and situated on the piston shank between the piston head and the fastener guide and made of elastomeric material wherein an outer diameter of the hollow element and an internal diameter of the hollow element are regularly varied creating uniformly spaced swellings and narrowings running circularly on an outer surface and an inner surface of the hollow element and wherein between each two neighboring narrowings is formed a segment with a sinusoidal or a frusta-spherical or a frusta-conical or a barrel wall contour and wherein in the initial blocking position of the piston a sum of wall thickness of all segments of the hollow element and a length of the fastener guide is slightly larger than a sum of a length of the piston shank and a thickness of a fastener head.

9. The power operated piston tool according to claim 8, wherein a maximal inner diameter of at least one said segment of the hollow element situated at both ends of the hollow element is smaller than an inner diameter of remaining segments of the hollow element.

10. The power operated piston tool according to claim 8, wherein walls of outer segments of the hollow element are thicker than walls of inner segments of the hollow element.

11. The power operated piston tool according to claim 8, wherein an inner end surface of outer segments of the hollow element is outwardly curved

12. The power operated piston tool according to claim 8, wherein a piston shank end face is distanced from the outer surface of the fastener guide slightly more than the thickness of the fastener head in the initial blocking position of the piston.

13. A power operated piston tool with a piston automatic return comprising

an outer barrel having a firing chamber at a first end;

a guiding barrel mounted in the outer barrel;

a fastener guide having an outer surface at a thin end and mounted at a thick part in the guiding barrel and with the thin end standing out from the outer barrel;

a piston provided with a piston head placed in the guiding barrel and a piston shank inserted in the fastener guide wherein the piston is movably positioned between a firing position via an initial blocking position to a fastening position;

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a firing-pin assembly mounted at the first end of the outer barrel;
and

a one-piece hollow element formed of segments and situated on the piston shank between the piston head and the fastener guide and made of elastomeric material wherein a sum of a length of the fastener guide and a length of the one-piece hollow element in a state when wall surfaces of neighboring segments of the one-piece element are in an introductory contact is slightly larger than a sum of a length of the piston shank and a thickness of a fastener head thereby a piston shank end face is distanced from the outer surface of the fastener guide slightly more than the thickness of the fastener head in the initial blocking position of the piston.

14. The power operated piston tool according to claim 13, wherein an internal wall surface and an outer wall surface of each segment of the segments of the one-piece hollow element has a sinusoidal profile.

15. The power operated piston tool according to claim 13, wherein an internal wall surface and an outer wall surface of each segment of the segments of the one-piece hollow element has a frustum of sphere profile.

16. The power operated piston tool according to claim 13, wherein an internal wall surface and an outer wall surface of each segment of the segments of the one-piece hollow element has a frustum of a cone profile.

17. The power operated piston tool according to claim 13, wherein an internal wall surface and an outer wall surface of each

segment of the segments of the one-piece hollow element has a barrel profile.

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18. The power operated piston tool according to claim 13, wherein an internal wall surface and an outer wall surface of each segment of the segments of the one-piece hollow element has a frustum of barrel profile

19. The power operated piston tool according to claim 13, wherein an inner end surface of outer segments of the one-piece hollow element is outwardly curved.

20. The power operated piston tool according to claim 13, wherein walls of outer segments of the one-piece hollow element are thicker than walls of inner segments of the one-piece hollow element.